Table 22

Concentrations of Selected Pollutants in Bay/Delta Estuary Biota (ppm wet weight)

Pollutant	Mussel	Clam	Fish	Bird	Seal	Concentrations Exceeding Alert Levels*
Arsenic	1.16 - 2.16 (1, 9)	—	0.13 - 1.20 (2)	—	—	Yes. Levels in some Bay shellfish exceed MIS.
Cadmium	0.11 - 4.91 (3)	—	0.03 - 0.48 (2)	4.17 (5)	<.06 - .33 (13)	Yes. Levels in some Bay shellfish exceed MIS.
Chromium	0.014 - 2.114 (3)	0.15 - 3.92 (4)	0.02 - 0.1 (2) 1.8 (striped bass) (7)	—	—	Yes. Levels in some Bay shellfish exceed MIS.
Copper	0.314 - 4.385 (3)	10 - 100 (6)	1.3 - 30 (2)	7.14 - 13.86 (5)	3.0 - 8.7 (13)	Yes. Levels in some Bay shellfish exceed MIS. Levels in some Suisun Bay and Delta fish exceed MIS.
Lead	0.03 - 74 (3)	—	0.02 - 0.2 (2)	64 - 102 (5)	0.13 - 1.22 (13)	Yes. Levels in some Bay shellfish exceed MIS.
Mercury	0.01 - 0.46 (3)	—	0.13 - 0.94 (2)	0.16 - 0.6 (2)	0.40 - 3.65 (13)	Yes. Levels in some Bay shellfish and Delta Fish exceed MIS.
Nickel	0.5 - 2.4 (1, 11)	—	0.8 (2)	0.1 (8)	0.11 - 4.10 (13)	No alert levels established for tissue.
Selenium	0.19 - 0.66 (1)	0.3 - 1.30 (9)	0.28 - 22.0 (10)	24 - 58 (10)	2.07 - 6.49 (13)	Yes. Levels in some Bay shellfish exceed MIS. Levels in some Bay fish exceed MARL. Levels in some Bay ducks exceed MARL.
Silver	0.02 - 22.5 (3)	0.14 - 28.57 (6)	0.13 - 0.94 (2)	0.33 - 3.70 (8)	—	No alert levels established for tissue.
Tributyltin	0.120 - 2.960 (1)	—	—	—	—	No alert levels established for tissue.
Zinc	11.0 - 45.8 (1)	—	16.0 - 43.0 (2)	21.6 (8)	—	No alert levels established for tissue.
PAH	0.025 - 13 (3)	—	0.017 - 14 (3)	—	—	No.
DDT and metabolites	<.002 - 3.21 (3)	—	0.020 - 5.18 (2)	—	5 - 34 (13)	Yes.Levels in some Delta fish exceed FDA action level.
PCB	0.009 - 0.657 (3)	—	0.05 - 6.99 (2, 12)	—	0.05 - 330 (13)	Yes. Levels in some Bay and Delta fish exceed FDA action level.

Note: Concentrations are shown for wet weight; data originally given for dry weight have been converted by dividing by seven. For seals, trace element data represent concentrations in dry whole blood; data for DDT and PCB represent concentrations in blood plasma lipids.

**The alert levels referred to in this table are the maximum tissue residue levels that are protective of human health. They include: 1) the median international standard (MIS), which is a general guideline of what other nations consider to be elevated contaminant levels in fish and shellfish tissue; 2) the U.S. Food and Drug Administration (FDA) action levels, which represent maximum allowable concentrations for some toxic substances in human foods; and 3) the State Department of Health Service's maximum allowable residue levels (MARL), established to ensure that a consumer of specified fish or wildlife species does not exceed the permissible intake level for particular contaminants.*

From data in:

(1) *State Mussel Watch Program in SWRCB, 1990*
(2) *State Toxic Substances Monitoring Program in SWRCB, 1990*
(3) *Long et al., 1988*
(4) *Hayes and Phillips, 1986 in SWRCB, 1990*
(5) *Ohlendorf, 1985 in SWRCB, 1990*
(6) *Luoma et al., 1985 in SWRCB, 1990*
(7) *Saiki and Palawski, 1990 in SWRCB, 1990*
(8) *Ohlendorf et al., 1986 in SWRCB, 1990*
(9) *Girvin et al., 1975 in SWRCB, 1990*
(10) *DFG, 1991*
(11) *Risebrough et al., 1978 in SWRCB, 1990*
(12) *NOAA, 1987*
(13) *Kopec et al., 1991*